

15¢

SEPTEMBER 9, 1950

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Hydrogen Spectacle

See Page 166

A SCIENCE SERVICE PUBLICATION

VOL. 33 NO. 1 PAGES 161-176

Washington
Subscription.

ed in a
ning.

ar 2, 1950

g lawns
tte butts
uminum
a dozen
d plate,
ears the
he cane.

ar 2, 1950

seed or
cket-like
he user
side to
in the
forced by

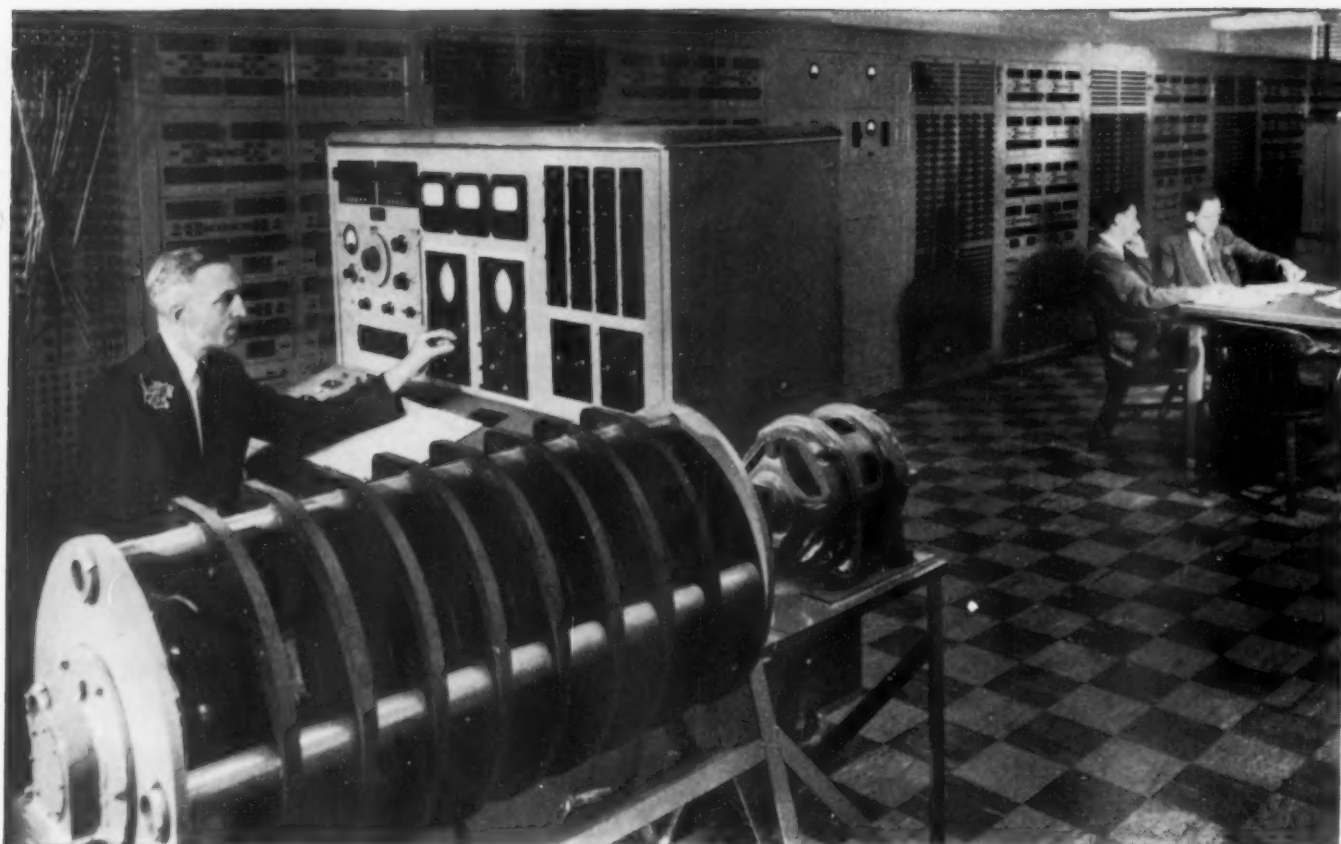
ar 2, 1950

for use
viewing
ographs,
source
ast with
erc. The
ocusing

ar 2, 1950

\$1

DETROIT PUBLIC LIBR
TECHNOLOGY DEPT
96 PUTNAM AVE
DETROIT



New Type Computer *Solves Problems without Arithmetic*

What will be the performance of a jet plane in flight when subjected to various disturbances? That's a problem to tax the most brilliant mathematician. Yet here comes a machine . . . that does the work of a "brain cell" . . . that's ready, willing and able to solve the problem, quickly . . . accurately.

This newly developed "brain cell", called the "Anacom", substitutes voltages and currents for numbers that are fed into digital-type computers . . . has solved 43 various types of engineering problems in addition to mathematical problems not arising directly from physical systems.

In operation, the "Anacom" produces an electrical "imitation" of mechanical forces. Resulting voltages representing stress, motion and similar factors appear as lines on an oscilloscope screen. These lines can be measured accurately and translated to terms of the product under study.

The "Anacom" is one of the more complex developments of Westinghouse to facilitate research, product developments and quality control. Its development is typical of the depth to which Westinghouse will probe in its constant endeavor to look ahead . . . to keep ahead . . . to live up to its promise . . .

YOU CAN BE SURE..IF IT'S Westinghouse

G-10099

ENGINEERING

Electricity via Channel

The European continent could transmit power to the British Isles through a submarine cable under the channel.

► **ELECTRIC** power could be transmitted from the European continent to the British Isles through a submarine cable under the Channel carrying high voltage direct current, Sir Harold Hartley, British power and electricity authority, declared in his presidential address before the British Association for the Advancement of Science in Birmingham, Eng.

Such a linking of the continental and British power systems would give a better balance between seasonal and other demands, Sir Harold declared. Direct current transmission of high voltage current has now passed the experimental stage, he said, and is waiting for development.

Recalling the more ambitious schemes of past years for a tunnel under the channel, the proposed power link could be of 250,000 kilowatt capacity and would then give both sides the equivalent of a large modern generating station as stand-by plant.

Looking farther into the future, the BAAS president declared that a way of converting the free energy of carbon oxidation (burning) directly into electricity is still one of the distant goals of research, although a young German doctor, named Mayer, as early as 1842 pointed out the inefficiency of the steam engine and the need of obtaining electricity by chemical means.

Due to the development of automatic controls and precision techniques that consume almost negligible quantities of current, Sir Harold predicted that such modern robots or automechanisms will become substitutes for the drudgery of the human brain.

"In the future one of the indexes of economic progress," he said, "should be, not the energy used per worker, but the output of goods and services per horsepower employed."

The problems that the world faces, as listed by Sir Harold, are:

The growing strain of increasing population.

The malnutrition and the endemic sickness of perhaps half the world.

The inequalities between the more forward and the backward peoples.

The gradual depletion of resources and their unequal distribution.

The human problem of changing the way of life and the outlook of many millions.

"These problems are the challenge to the science and engineering of our time," Sir Harold told the British scientists. "Only

they can solve them—if allowed, and if men's minds are bent on quest of plenty not on quest of power. The orderly solution of these problems must depend on a knowledge of conditions and the needs of each country, on a survey of its natural resources, its human geography, its economic structure and its capacity to produce and consume."

Science News Letter, September 9, 1950

ENGINEERING

Hot Air Distributed By New Ceiling Device

► **WIDE** distribution of heated air, in a factory, garage or store, is provided with a new ceiling or wall heater with diffusers containing both horizontal and vertical blades to direct the heat where wanted.

It is a product of the Trane Company of La Crosse, Wis., and is made in two types. One is called "Louver Cone" and the other "Louver Fin." They are flexible ac-

cessories for the horizontal propeller and vertical projection types of steam and hot water heating units.

These new heat distributors are designed to solve diffusion on the job by simple adjustments which can be made by the fingers without use of tools. The flow of heated air can be sent in almost any direction where needed in many different patterns.

The Louver Cone diffuser fits projection type heaters often seen in high-ceiling factory rooms, warehouses and drug stores. Projection type heaters are generally used to recapture the heated air that has collected near the ceiling and drive it to near the floor where needed.

The Louver Fin diffuser attaches to horizontal type heaters which are usually placed on the walls of the room. It circulates the heated air horizontally. This new type has seven horizontal and 56 vertical blades, each adjustable to send the heated air in various directions.

Science News Letter, September 9, 1950

PSYCHOLOGY

Voice, Gestures Express Emotions without Words

► **EVEN** if no words are used, emotions can be expressed through the tone of voice, gestures and other non-verbal methods of expression.

Wire recordings of interviews conducted



HALF AND HALF—With half its blades straightened and half turned to the left, the diffuser can direct air from a unit heater to blanket a doorway and cover a counter. This is a typical store use.

entirely in numbers, by persons counting to each other, were made in an experiment at Stanford University in California. Those taking part in the interviews made independent descriptions of what took place in emotional exchange and a group of observers also made descriptions of the emotional interchange.

Psychologists later were successful in matching the descriptions to the recordings.

Purpose of the experiment was to de-

velop a method for teaching students preparing to be specialists in mental sickness how to pay attention to the emotions expressed by a patient in his tone of voice and gestures. The scheme of using numbers in training situations works, reports Dr. Clare Wright Thompson, of the University of California Medical School, and Dr. Katherine Bradway of Stanford in the *JOURNAL OF CONSULTING PSYCHOLOGY* (Aug.).

Science News Letter, September 9, 1950

PSYCHOLOGY

Psychology in Politics

► **PSYCHOLOGICAL** knowledge and insight are most urgently required to solve the political problems that at the present time are the most pressing of all those that beset humanity, Dr. J. C. Flugel, psychologist of London's University College, told the British Association for the Advancement of Science in Birmingham, England, in his presidential address to the psychological section.

Politicians have for the most part shown little inclination to avail themselves of such knowledge as the psychologists possess, Dr. Flugel charged. They have not encouraged psychological research on a scale commensurate with the immense issues at stake.

Racial or national prejudices of a very harmful sort can in some cases be modified by psychological means, Dr. Flugel said.

From psychoanalysis, Dr. Flugel explained, it is now realized that we divide our attitude so that different persons or groups tend to be considered as crudely "good" or "bad." We project our own faults or those of our group and attribute them to others, he said, sometimes with a pathological intensity and disregard of reality which are comparable to those of the individual paranoiac.

Individual conscience and judgment give way in favor of a childish and irresponsible idealization of the group or its leader and

everything they stand for, Dr. Flugel observed.

Hope that the world can cure itself exists in the realization of such facts of human behavior as worked out by the social psychologists and the cultural anthropologists. Dr. Flugel felt they could be made as effective in the statesmen's councils as they are in the nurseries.

Science News Letter, September 9, 1950

METEOROLOGY

Warm September Forecast For East and West

► A **WARMER**-than-normal September west of the Continental Divide and east of the Appalachians was forecast by the Weather Bureau. The Extended Forecast Section says that the Southwest and New England can expect the greatest departures from normal.

The central regions of the country can expect an average month so far as temperature is concerned.

The country is divided against itself so far as the prediction for rain is concerned. Subnormal rainfall in the West was predicted, but abundant rainfall in the East.

Cool, wet weather in the East during August did not jibe with the Weather Bureau's Aug. 1 30-day prediction. At the time it was made, Extended Forecast Sec-

tion Chief Jerome Namias said that it was a difficult one to make. Events bore him out.

Mr. Namias expected strong west winds from the Pacific in the upper atmosphere to bring the warm, dry weather he had predicted to the East. At the time, however, he thought there was a possibility that tropical air from the Atlantic would upset his forecast. It did, meeting the winds from the Pacific and causing a great deal of rain.

Science News Letter, September 9, 1950

SCIENCE NEWS LETTER

VOL. 58 SEPTEMBER 9, 1950 No. 11

41,919 copies of this issue printed

The Weekly Summary of Current Science, published every Saturday by **SCIENCE SERVICE, Inc.**, 1719 N St., N. W. Washington 6, D. C., North 2255. Edited by **WATSON DAVIS**.

Subscription rates: 1 yr., \$5.50; 2 yrs., \$10.00; 3 yrs., \$14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

Copyright, 1950, by Science Service, Inc. Reproduction of any portion of **SCIENCE NEWS LETTER** is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by **CHEMISTRY** (monthly) and **THINGS** of Science (monthly).

Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C. under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in *Readers' Guide to Periodical Literature*, *Abridged Guide*, and the *Engineering Index*.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., Pennsylvania 6-5566 and 360 N. Michigan Ave., Chicago. STAt 4439.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Edwin G. Conklin, Princeton University; Karl Lark-Horowitz, Purdue University; Kirtley F. Mather, Harvard University. Nominated by the National Academy of Sciences: Harlow Shapley, Harvard College Observatory; R. A. Millikan, California Institute of Technology; L. A. Maynard, Cornell University. Nominated by the National Research Council: Ross G. Harrison, Yale University; Alexander Wetmore, Secretary, Smithsonian Institution; Rene J. Dubos, Rockefeller Institute for Medical Research. Nominated by the Journalistic Profession: A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Baltimore Sun Papers; O. W. Riegel, Washington and Lee School of Journalism. Nominated by the E. W. Scripps Estate: H. L. Smithson, E. W. Scripps Trust; Frank R. Ford, Evansville Press; Charles E. Scripps, Scripps Howard Newspapers.

Officers—President: Harlow Shapley; Vice President and chairman of Executive Committee: Alexander Wetmore; Treasurer: O. W. Riegel; Secretary: Watson Davis.

Staff—Director: Watson Davis. Writers: Jane Stafford, A. C. Monahan, Marjorie Van de Water, Ann Ewing, Wadsworth Likely, Margaret Rallings, Sam Matthews. Science Clubs of America: Joseph H. Kraus, Margaret E. Patterson. Photography: Fremont Davis. Sales and Advertising: Hallie Jenkins. Production: Priscilla Howe. In London: J. G. Feinberg.

Question Box

CHEMISTRY

How can trees supply tires? p. 165.

CONSERVATION

What is the cause of Africa's unrest? p. 170.

ENGINEERING

What is the proposed new use of the English Channel? p. 163.

Photographs: Cover, Stewart Sharpless and W. W. Morgan, Yerkes Observatory, University of Chicago; p. 163, Hedrich-Blessing Studio; p. 165, Brookhaven National Laboratory; p. 167, Building Research Station, England; p. 170, 171, Dr. Walter C. Lowdermilk.

PSYCHOLOGY

How can emotion be expressed without words? p. 163.

On what day is the British labor output lowest? p. 169.

What kind of music does a he-man like? p. 168.

ZOOLOGY

What is the lobster's hidden talent? p. 174.

CHEMISTRY

Tires from Trees

Waste from spruce wood may be the material from which tomorrow's synthetic rubber will be made. This rubber may be superior to the synthetic rubber now in use.

► RAW material for tomorrow's synthetic rubber can be obtained from waste from the manufacture of paper from spruce wood, the American Chemical Society was told in Chicago.

This new rubber-making chemical is called PADMS, which is short for para alpha dimethyl styrene. It can replace the usual styrene that combines with butadiene to make GR-S synthetic rubber, the sort now in largest production. Dr. K. A. Kobe and Dr. R. T. Romans of the University of Texas made the report to the chemists.

Now styrene is in very short supply because of the expanded synthetic rubber program and because it is widely used in new synthetic chemical processes. It is made from benzene, obtained from oil or natural gas, and this is the mother material of so many other essential chemical products.

From the by-product of sulfite paper pulp, which is not only waste but a nuisance, chemists can obtain para-cymene which is then converted into PADMS by a process known as catalytic dehydrogenation.

The synthetic rubber made with the kind

of styrene from paper manufacture may even produce better synthetic rubber than the styrene now used. A few experimental batches of synthetic rubber were made with PADMS produced from terpenes by the turpentine or naval stores industry. In the few tires tested, there was a hint that the rubber might be superior to the kind now manufactured, but much larger pilot plant manufacture and extensive road tests of the tires made will be necessary before the scientists can be sure. There is confidence that the new rubber will be just as good as the present synthetic sort.

The paper pulp industry is expected to be willing to install the necessary recovery equipment for the cymene by-product if it would be utilized in large amount by the synthetic rubber industry. And the synthetic rubber plants would be reluctant to convert to the paper pulp raw material unless large supplies were assured.

Synthetic rubber production of the GR-S variety is now above the 400,000-ton-per-year mark due to the war situation and it is expected to increase in coming months.

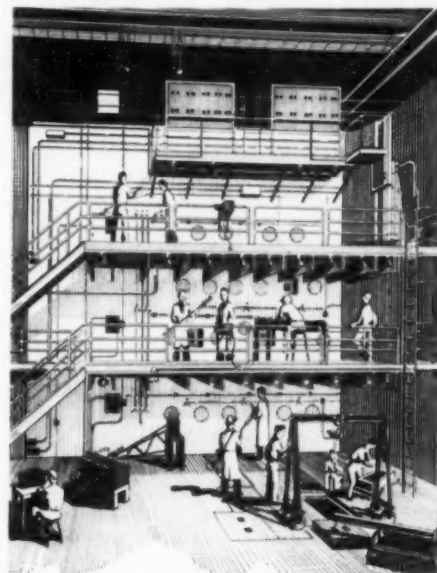
Science News Letter, September 9, 1950

the infinite out by treating some of these problems in an algebraic way. The algebraic approach provides simpler methods of solution for many practical problems ranging from the design of electrical circuits to gun sights.

Probability, which is basic not alone to gambling but to all human activity, is being put upon a firm mathematical basis and not left to plausible conjectures and paradoxes.

In the control of quality, so important to manufacturing production, mathematics has made recent and important contributions. Statistics are being used to tell manufacturers how often to pick a sample in connection with routine machine production.

For example, if a screw part is being made by an automatic machine it is wasteful to test each part produced to see whether it meets specifications. The trick is to make a test at infrequent intervals while the output is running true to specifications, but to increase the frequency of tests as soon as any divergence from specifications is noted. In this way it is quickly determined whether the divergence is a random fluctuation or whether the machine is really getting out of adjustment.



SCIENTISTS AT WORK—Artist's conception of how scientific experiments will be conducted on the west face of the Brookhaven reactor. Substances are introduced through the round ports or openings in the concrete shield for bombardment by neutrons inside the reactor. The bombardment makes the atoms of most elements radioactive. Beams of neutrons may also be let out of the reactor for studies of neutrons themselves, or for irradiation of various substances including plant and animal cells.

MATHEMATICS

From Now On: Math

Mathematics will continue to be vital in the sciences while new application of it in industrial production is expected.

By WATSON DAVIS

Twenty-fourth in a series of glances forward into science.

► MATHEMATICS is called both the queen of the sciences and the handmaiden of technology. Repeatedly in the long upward march of scientific progress, mathematical formulations and theories have led the way to great physical and biological developments.

The atomic bomb—both the A and H varieties—were first built in the formulas of the mathematical physicists. From the standpoint of engineering and technology, mathematics in its various ramifications is a very necessary tool, often creative of new ideas and new applications.

Mathematics as a science is still young and growing. It is by no means static. In fact, several hundred periodicals are

published throughout the world, devoted in whole or in part to mathematical research.

The scientists who work with paper and pencil have new and challenging problems and applications.

One of the plagues in mathematics, as in ordinary life, is in the fact that many problems do not seem to have a solution; that is, they are indeterminant. It used to be thought that everything could be resolved in some way or other if one were only ingenious enough, but it is now known that this is not true, because problems have been found which can be shown to be undecidable.

One thing that the mathematicians have been doing is to tackle analysis which is concerned with infinite processes, and turn it into algebra, which is concerned with finite processes. The new methods drop

that it
ents bore
st winds
mosphere
he had
ne, how-
possibility
c would
ting the
g a great

er 9, 1950

TER
No. 11

nd

nce, pub-
ICE, Inc.,
C., North

, \$10.00;
ore than
r foreign

ce is re-
ase state
ed. Your
number

Inc. Re-
CE NEWS
s, maga-
to avail
services
vice also
INGS of

nd class
n, D. C.
tance for
provided
on, para-
S. Code
lished in
title reg-
an Patent
periodical
engineering

Advertis-
nd, Inc.,
566 and
39.

f Science
on.

American
r: Edwin
rk-Hora-
Harvard
Academy
College
stitute of
niversity
il: Ross
Vermore,
Dubos,
Nomi-
l. Kirch-
wanson,
ashington
by the
Scripps
Charles E.

Presi-
Alex-
cretary:

st: Jane
Water,
tallings,
Joseph
graphy:
ie Jenk-
J. G.

Mathematics tells how frequently tests should be made so as, on the one hand, to avoid unnecessary testing when things are running smoothly, while on the other hand, to avoid making many defective parts by quickly sensing when things start to go wrong.

A real revolution in computing has been started by the introduction of automatic, high speed, computing devices, the so-called mechanical or electronic brains. This is opening new realms of mathematics. Not only will such computers speed up computations which are now done by slower, more tedious, methods, but they will make it possible to carry out computations which are too long to undertake by previous methods. The way in which mathematicians are trained in the future will be changed by the availability of these large computers.

The matter of mathematical tables may be vastly changed, because these machines may find it simpler and quicker to compute a particular value when needed rather than to look it up in a table. If the value

can be computed in less time and at less cost whenever it is needed, the machine will obviate the necessity of elaborate and costly table of values seldom required.

For the future, there may be expected:

A. Advances in pure mathematics either in filling gaps in our present knowledge or in the exploration of new fields.

B. Mathematicians will continue to explore the factors and relationships within the hearts of atoms, the living cell, the causes of diseases and the technicalities of engineering and production, with the likelihood of penetrating some of these mysteries.

C. While a more intensive development of mathematical research in the most advanced fields will take place, a new development in the application of mathematics to problems of production in industry is expected.

D. Scientists in almost every field will need to have a basic knowledge of mathematics and its power as an aid to scientific research.

Science News Letter, September 9, 1950

ASTRONOMY

Eclipse Thought Bad Omen

The path of the eclipse, beginning and ending in the western hemisphere, will be in the eastern hemisphere most of the time.

► MOST of the people in Korea, both North and South Koreans, consider the partial eclipse of the sun that will be visible there next Tuesday, Sept. 12, a bad omen, a thing of evil.

GI's busy slugging it out with the Communist armies will have little time to watch the moon blot out part of the sun's bright disk.

Both the total and partial phases of the eclipse can be seen only from the eastern hemisphere most of the time, although the path of totality begins and ends in the western hemisphere.

The partial eclipse will be visible over most of Siberia, northern China, Korea, Japan, Alaska, the Hawaiian islands and wide reaches of the Pacific.

The path of the total eclipse, that is where the sun will be completely blacked out by the moon, is nearly north-south for most of the way. It sweeps down on mainly uninhabited areas, starting near the north pole and going down to the central north Pacific, ending at 35 degrees latitude, about on a line with San Francisco.

Attu and Agattu islands, at the tip of the Aleutian chain, lie in the path of totality. Ten government scientists have set up a radio astronomy laboratory on Attu for viewing the eclipse. Using radar an-

tenna instead of optical instruments, they will view the sun's eclipse. At their position, astronomers calculate that totality will last one minute and 13 seconds.

This is only the second eclipse that has been studied with war-developed radar-like instruments, the other one being on May 20, 1947.

Just in case the weather is clear, however, these radio-wave specialists have taken along a 10-inch telescope with which they hope to be able to view the bright halo of the corona around a darkened sun.

Even if the sun is not visible to the naked eye, the measurements that the scientific world is awaiting can be made. For the sun gives off radiation that we can not see. Great streams of electrons, shot off from the sun, produce auroras when they strike the earth's atmospheric shell, play havoc with radio communications and appear to have an effect on the weather.

To learn more about the physics of the sun, the government scientists will train radio radiation-detecting instruments on it, using the moon as a knife edge to cut off the radiation. They will make their measurements at four different radio wavelengths.

As the moon slices in front of the sun, it will cut down on these different radiations

just the way that it does on the visible ones. By accurately timing the disappearance of each of these wavelengths the physicists will be able to learn the true size of the sun, not just the size of the part that is visible.

Scientists hope also to be able to get some idea of the contribution of sunspots, great whirling turbulences seen on the sun's surface, to the total radiation of the sun. When sunspots appear on the sun, hours later radio communications on earth will be affected. There also seems to be an increase in the intensity of the bombardment of the earth by cosmic rays after sunspots appear on the sun. Further verification of the recently proved direct travel of hydrogen atoms from the sun to the earth (See story below) is expected from their observations.

Also checks will be made of the astronomical constants, such as the positions, motions and distances of the moon and sun.

Scientists will have to wait until Feb. 25, 1952, for the next total solar eclipse, then over two years for the next one, on June 30, 1954. That one starts in Nebraska just as the sun is rising and passes over Iowa, Minnesota, Wisconsin, Michigan, Ontario, Quebec, and Labrador on this continent.

Science News Letter, September 9, 1950

ASTRONOMY

Sun Blasts of Hydrogen Cause Aurora Display

See Front Cover

► THE earth has been bombarded with hydrogen—from outside the earth. No hydrogen bomb scare this, although the atomic projectiles reported by the University of Chicago do come from the sun which is past master of changing matter into energy with which to continue to shine. A great auroral display recently caused the skies to blaze with northern lights.

The spectacular northern lights of Aug. 19, photographed by astronomers at the University of Chicago's Yerkes Observatory, are shown on this week's cover of SCIENCE NEWS LETTER. The picture was taken with a wide-angled camera which covers a field of 140 degrees. The dome of the observatory and other buildings can be seen as silhouettes at the lower part of the picture. The three shadows emerging from the center are supports for the camera's plateholder.

This display allowed Yerkes Observatory astronomer, A. B. Meinel, to determine that the cause was hydrogen gas given off from sunspots. Traveling 1800 miles per second, the hydrogen struck the earth's atmosphere and made it give off light. Scientists have suspected this, but Mr. Meinel proved it by displacement of hydrogen lines in the spectrum of the borealis.

Science News Letter, September 9, 1950

PSYCHOLOGY

Oxygen Affects Learning

Lack of oxygen affects learning and relearning ability. Individuals vary in the degree to which oxygen lack affects them.

► EXPOSURE to oxygen lack equivalent to 30,000 feet altitude causes a loss of learning ability and relearning ability. The loss increases as the exposure time increases from one-half hour to six hours.

This is indicated by experiments with rats reported in State College, Pa., to the American Psychological Association by Dr. William P. Hurder of Louisiana State University.

After being deprived of oxygen, the rats were trained or retrained to find their way through an alley maze. One hundred days later the rats were killed and their brains examined.

Brain changes were found, consisting of a decrease in cellular density with increasing exposure to oxygen lack.

Not all individuals are affected alike by oxygen lack. There is increasing variability in learning loss with increasing exposure to anoxia. But with the brain changes, there is no similar variability, it was found.

Smothering during the process of birth varies in effect with different individuals, Dr. R. Frederick Becker, of Jefferson Medi-

cal College, said, reporting to the same meeting on experiments on guinea pigs delivered by Caesarian operation.

The animals were asphyxiated at birth and later resuscitated with oxygen. Later they were killed and their brains examined.

PSYCHIATRY

More Mental Hospitals

► More hospital facilities and personnel are needed to care for emotionally disturbed children, Edgar C. Hayhow, director of the East Orange, N.J., General Hospital and member of the board of regents of the American College of Hospital Administrators, declared at a planning meeting in Washington of the Midcentury White House Conference on Children and Youth.

Extremely few institutions in the country are suitable for inpatient observation and treatment of emotionally disturbed children, he stated.

The parents of all but a very few chil-

The site, as well as the degree of injury, varied. With some it was the thalamus, in others the brain stem, for some the frontal cortex, and others, the lumbo-sacral cord.

Some animals smothered for a short time suffered more than others asphyxiated longer.

Severe cyanosis of the "blue-baby" type did not always result in severe nerve damage.

Smothered animals as compared with litter-mates not asphyxiated were apathetic, less active, less frustrated under stress, were poor learners with limited memories and made repeated mistakes.

Science News Letter, September 9, 1950

dren, whose emotional problems are serious enough to warrant short term but continuous observation or treatment, must forego such treatment for their children or send them to entirely unsuitable mental hospitals for adults. And very few such hospitals will accept children.

Parents of children whose mental illnesses may require long-term treatment are confronted with a similar situation.

Even children's hospitals and general hospitals need increased facilities and personnel for caring for the child patients.

These two situations plus expansion of hospital facilities and institutions for mentally deficient and crippled children are four problems which Mr. Hayhow declared urgently need consideration by the Conference.

Science News Letter, September 9, 1950

ENGINEERING

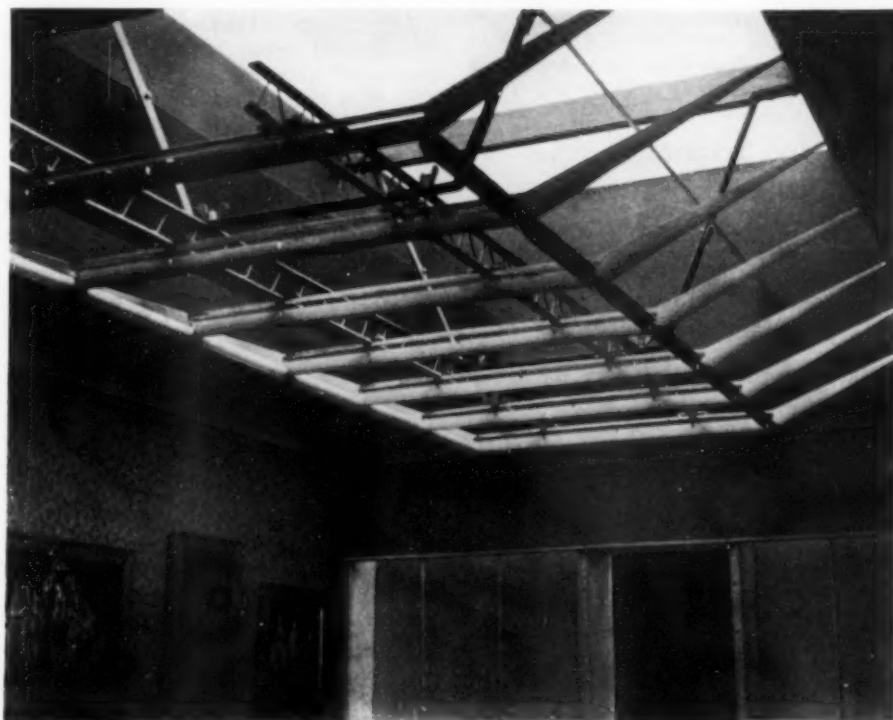
Upside-down Skylight Lights Art Gallery

► WHEN the city art gallery at Birmingham, England, was rebuilt after the war, engineers installed a unique means of bringing daylight indoors.

Called a "laylight," the upside-down skylight casts the strongest light in the gallery directly upon the surface of the paintings. From all other points, both above and below the pictures, the light is diffused. The paintings thus seem to stand out from the walls, and the public sees them in light which gives greatest possible emphasis to natural color and contrast.

As shown in the picture, frosted glass at the bottom of the lay-light has been removed. Behind it, when the work is complete, will be a combination of fluorescent and tungsten filament lights for night illumination closely approximating daylight.

Science News Letter, September 9, 1950



UNIQUE LAYLIGHT—A view in the Birmingham, England, art gallery looking up to the roof light. The strongest light falls on the paintings which seem to stand out from the wall.

BACTERIOLOGY

Cotton Plants of the Future from Bacteria

► **BACTERIA**—germs to the layman—may be the cotton plants of the future, Prof. M. Stacey of Birmingham University declared at the British Association for the Advancement of Science.

He reported production of high grade cellulose from cane sugar by bacterial action. If carried out on the scale of penicillin production from mold, a huge cellulose crop could be harvested every few days. But economical production would depend on a very cheap sugar source.

In Prof. Stacey's bacterial polysaccharide laboratory, bacteria also are used to produce other useful starch and sugar products such as dextrans which can be turned into rubber-like, gasoline-insoluble plastics or dissolved to form a synthetic blood plasma substitute. Current output of this is 7,000 pints per month.

Tuberculosis germs have yielded six chemically different complex sugars which may be clues to a tuberculosis vaccine.

Radioactively labelled starch for use in vital biological studies has also been produced by bacteria from simple chemicals, called acetates, tagged with radioactive components.

Science News Letter, September 9, 1950

ENTOMOLOGY

Some Ants See, Some Scent Their Way Home

► **SOME** ants, foraging for food, find their way back home by sight while other kinds of these insects, in Britain at least, guide themselves homeward by their sense of smell.

Prof. J. D. Carthy of Cambridge University told the British Association for the Advancement of Science that his experiments show that the worker ants of two common British species use predominantly different methods of orienting themselves. The scent trail is laid down by one kind by means of a bodily secretion.

Science News Letter, September 9, 1950

MEDICINE

Device Cuts Heart Valves With Less Bleeding

► **A NEW** valve cutter for operating on sick hearts in small children is reported in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Sept. 2).

A 23-day-old baby boy was among the patients on whom the instrument was used with good results, Drs. Willis J. Potts, Stanley Gibson and William L. Riker of this city and Dr. C. R. Leininger of San Rafael, Calif., report.

The instrument is used to cut the constricted valve in the opening between the pulmonary artery and the right ventricle of the heart. Babies born with this condition may be "blue babies." The new instrument, made by Bruno Richter of Glen Ellyn, Ill., was devised to decrease the size of the wound in the heart made by previous instruments which had diamond-shaped cutting blades. Less bleeding and disturbance of heart rhythm are other advantages of the new instrument.

Science News Letter, September 9, 1950

PSYCHIATRY

Arctic Duty Spoils Morale of GI's

► **DUTY** in the Arctic affects the disposition of the GI—for the worse. He becomes less cheerful, sleeps less and has less patience, an opinion poll revealed to Maj. Anthony Debons, of the Arctic Aeromedical Laboratory, Ladd Air Force Base, Alaska.

Duty in these northern latitudes also makes a soldier more disgusted and depressed.

These symptoms are, on the whole, typical of neurasthenia, Maj. Debons reports.

Those who reported themselves as more able to endure the cold of a coming winter were less depressed than those who felt less capable of enduring the cold again.

The men polled average 20 years of age and most are unmarried. Those reporting no change in outlook had the highest level of education.

Science News Letter, September 9, 1950

GENERAL SCIENCE

Fight for Science Foundation Renewed

► **AMERICAN** scientists have been called to action to rescue the National Science Foundation appropriation of \$475,000 which has been refused by the House Appropriations Committee.

The Inter-Society Committee for a National Science Foundation has been reactivated under the leadership of Dr. Howard A. Meyerhoff, administrative secretary of the American Association for the Advancement of Science, and leading scientists throughout the country are telling the Senate Appropriations Committee about the important job that the newly authorized Foundation could do in the present emergency.

After delay of five years, Congress finally authorized the creation of the Foundation last spring, but money to organize this new civilian agency has not yet been appropriated, although President Truman has repeatedly asked Congress to do so.

Science News Letter, September 9, 1950

IN SCIENCE

PSYCHOLOGY

Shostakovich Music Is He-Man Stuff

► **THE** music of Shostakovich and Wagner is considered masculine, that of Mendelssohn and Chopin feminine, by 206 college students asked to rate recordings for "sex character."

This finding, supporting the contentions of psychoanalysts, was reported to the American Psychological Association meeting by Drs. Paul R. Farnsworth, J. O. Trembley, and C. E. Dutton, of Stanford University.

The students, and particularly the men, were more familiar with and preferred the composers of masculine music.

Women with the most masculine interests also tended to prefer the masculine music.

Science News Letter, September 9, 1950

MEDICINE

Aureomycin Conquers Klebsiella Pneumonia

► **DRAMATIC** recovery of a man believed to be the first patient to get aureomycin treatment for Klebsiella pneumonia is reported by Drs. Maurice Nataro, David Shapiro and Armond T. Gordon, of the Veterans Administration Hospital at Louisville, Ky., and the University of Louisville School of Medicine, in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Sept. 2) in Chicago.

The patient had been sick 13 days and was almost in coma. Penicillin had failed to help him. Aureomycin, another of the famous mold drugs, was started. Within 24 hours he was much improved and by 48 hours his fever was gone and his temperature remained normal thereafter.

Klebsiella pneumonia is caused by a germ called Klebsiella, or sometimes, Friedlander's bacillus. Even after the discovery of sulfa drugs and penicillin, effective in pneumococcal pneumonias, reports showed deaths from Klebsiella pneumonia as high as 51% to 97%.

Streptomycin began to change the picture, and now the death rate is down to about 20%. That is, only one in five patients dies of the disease when treated with streptomycin. Laboratory tests had shown that aureomycin was effective in halting the Klebsiella germ, and since it is less toxic than streptomycin, the Louisville doctors decided to try it on one patient.

They call the results "dramatic" and advise further trial of it.

Science News Letter, September 9, 1950

SCIENCE FIELDS

MINING

U. S. Less Dependent on Foreign Cobalt Supplies

➤ MUCH of the strategic cobalt needed in producing special steel alloys, and in permanent magnet alloys, may be mined in the United States in the near future, it was indicated in Salt Lake City at the meeting of the American Mining Congress.

A larger quantity of domestic cobalt would relieve the present dependency of America on foreign ore. Consumption by American refiners of cobalt contained in alloys and ores is approaching 3,000,000 pounds annually. Belgian Congo is now the chief source of supply. Canada and other countries produce some for American markets.

"Years of almost complete dependence upon foreign sources of cobalt will come to an end when production of this vital element begins at the Blackbird Mine of the Calera Mining Company near Forney, Idaho," Edwin B. Douglas, manager, told the meeting.

Proved reserves at present are sufficient to permit operation of a 600-ton mill for a considerable number of years, he stated. No serious complications are anticipated in mining the ore bodies proved so far.

Difficulties of unusual scope were encountered in treating ore to produce a cobalt and copper concentrate. These, however, have been solved. A satisfactory separation method has been developed. The separation is made by differential flotation methods employing long conditioning at relatively high temperature of pulp.

Science News Letter, September 9, 1950

MEDICINE

Warn Against "Shotgun" Use of Miracle Drugs

➤ THE strong possibility that the "shotgun" administration of two or more antibiotics may boomerang, with cancellation of benefits of the drugs, has been raised in research at the University of California School of Medicine.

The custom of giving two or more "miracle drugs" has been growing in medical circles in recent years. "Shotgun" treatment is used especially when the infectious agent cannot be definitely identified.

The physician knows that one antibiotic is especially effective against one organism, while another is more effective against another. The theory is that by giving several drugs, one will be certain to destroy the infecting culprit.

A further reason for "shotgun" treat-

ment has been the finding of complementary action between some antibiotics when they are given simultaneously. For example, the California researchers had already found that streptomycin and penicillin are more effective together than when given separately.

However, the opposite effect has been found when penicillin and chloramphenicol are given together. In mice infected with a deadly streptococcus, either of the two drugs saved 80% of the animals. When the two drugs were given simultaneously, only 40% of the mice were saved from death. The same results were obtained over and over again.

The California scientists say that this same mechanism may occur in man, and that physicians therefore should be cautious about giving antibiotics in the "shotgun" fashion.

The research was done by Drs. Ernest Jawetz and R. S. Speck and Miss J. B. Gunnison, of the department of bacteriology.

Science News Letter, September 9, 1950

CHEMISTRY

Anti-Gas Chemical Cures Lead Poisoning

➤ A SUCCESSFUL treatment of lead poisoning through use of BAL, developed by the British for use against lewisite poison gas, is reported from Denmark in LANCET (July 29).

BAL has already been found of great importance in countering intoxications produced by arsenic, gold and mercury. Dr. Poul Bastrup-Madsen of Arhus Municipal Hospital, Copenhagen, has now used this drug, dimercaprol, as British anti-lewisite is called, in bringing about successful recovery of two women who had swallowed litharge, a lead oxide.

The symptoms of the poisoning were not aggravated by the treatment, which resulted in the more rapid removal of the lead from the body than other treatments, such as ammonium chloride and parathyroid hormone.

Science News Letter, September 9, 1950

PLANT PATHOLOGY

Oak Wilt Hits Ozark Trees

➤ THERE is tree trouble in the Ozarks. Aerial surveys show that oak wilt, a serious forest disease that cannot be controlled, is spreading in Missouri and Arkansas. Giant oaks are the first attacked by the fungus. U.S. Department of Agriculture forest pathologist Dr. T. W. Bretz is urging vigorous research to work out control of this forest menace. Cleveand is the latest new location of the disease.

Science News Letter, September 9, 1950

MEDICINE

Safer Hot Wet Packs For Polio Victims

➤ BETTER and safer hot wet packs for polio victims are possible through new equipment reported at the American Congress of Physical Medicine in Boston.

The new equipment consists of a portable electric apparatus that generates heat within a moistened pack. The current is an interrupted one in alternating, automatic cycles. This produces a significant rise in temperature within the polio victim's muscles.

The electrically heated packs, just developed by the General Electric Company, were tested by Drs. Alex Harell and Sedgwick Mead and Miss Emily Mueller, physical therapist, of Washington University School of Medicine. The apparatus is not yet available for general use.

From the preliminary trials, Dr. Harell reported the following advantages over the conventional hot packs; safety to patient because of internal regulation of the heating mechanism; minimum of discomfort to the patient because the pack does not need to be reapplied after reheating and can be laced or tightly wound in place, permitting free movement of arms and legs while the pack is on; portability of the device; simplicity of use and minimum number of persons needed to apply the pack.

Science News Letter, September 9, 1950

PSYCHOLOGY

"Blue Monday" Affects Labor, Absenteeism

➤ THERE is something to that idea of "Blue Monday" so far as labor output and absenteeism are concerned.

On Mondays the average hourly output of British industry is lowest, and more employees are away from their jobs, Dr. W. Baldamus, sociologist of Birmingham University, reported to the British Association for the Advancement of Science meeting.

In general both turnover and absenteeism decrease with length of service, Dr. Baldamus found. Many of the reasons for poor or good performance by workers are linked to the industrial situation and attitudes toward work and leisure, instead of such general concepts as practice, interest, willingness and boredom.

Accidents in British mines fluctuate with the way the nation is feeling and reacting. Dr. T. T. Paterson, anthropologist of Cambridge University, reported. Accidents, absenteeism, production, strike intensity and other human conditions in the mines vary with highway accidents and strikes throughout all industry.

Science News Letter, September 9, 1950

CONSERVATION

Fire and Famine Foment Unrest

Lack of food sets off riots in South Africa. Improved production per acre, decentralized industries and village improvement would help to remedy the problem.

By MARJORIE VAN DE WATER

► **DARKEST** Africa is lighted by the flames of burning land and is parched with thirst. There is not enough to eat.

This is what has touched off the race and class riots that are tearing sections of the continent apart. Hunger is fomenting unrest among teeming millions of the African people.

The native population of Africa is doubling in some colonial areas, but agriculture is not keeping up with enough food for the additional hungry mouths. Result: Food shortages and increased food prices with attendant unrest, agitation, and class conflict.

Some of the reasons for the agricultural shortages are described by Dr. Walter C. Lowdermilk, land use expert, who has just returned from a survey of the British colonies in Africa.

Flying from London he visited colonial areas in West Africa; thence to Johannesburg, and visits to Bambolan, Swaziland, Southern Rhodesia, Nyasaland, Northern Rhodesia. On his way back, Dr. Lowdermilk stopped to visit South Africa's new ground nut scheme.

80% Land Burning Annually

A tragic problem for agriculture is the deliberate burning over of 80% of the land every year, setting the whole continent aflame. Various reasons are given for this burning, such as to capture wild animals or for protection against them, but the truth of the matter seems to be that the people are in the grip of a compulsion to burn, born of superstition and ignorance.

The land must be burned, they feel. It always has been burned over. It must continue to be. The British government has failed to wipe out this compulsion. Colonial administrators now are trying to get the people to do their burning early in the dry season when it will do the least damage.

Even more serious than the food shortage is the water famine. This is due partly to climatic conditions and partly to the geology. Rain falls only during four or five months of the year. More than half the year is dry season.

Normal geologic erosion over countless centuries has worn the land and rock down until the land of West Africa is a vast plain. The soil generally is derived from solid, crystalline rock which holds little ground water. Springs are rare; much of the earth dry and barren except where

irrigated.

Occasionally the flat landscape is relieved by the stumps or cores of mountains left by the process of erosion. These are known as "inselbergs."

Central West Africa is more fortunate, but there the native people are ignorantly destroying their natural wealth despite the advice of agricultural officers.

Valuable Forests Burned

A rain forest belt with mahogany and other valuable trees extends along the coast south of the Bulge. But to the people who find themselves living there and in need of food for empty stomachs, the trees seem only an obstacle to gardening. So the forest giants are cut down and burned.

The ashes which contain the minerals the trees have taken from the soil enrich the garden land and result in good crops, but only for a single year or two—rarely three years. Then the farmer moves on to another locality, and cuts more trees to repeat the process, called shifting cultivation.

In this way 100,000 acres of beautiful rain forests are being destroyed each year on the Gold Coast.

The rain forest belt of West Africa is bordered by 500 miles of savanna land covered only with low trees and spiny shrubs. Beyond the savanna is a thorn-bush savanna and after that the Sahara itself.

Power Possibilities Great

Rivers in this rainy part of Africa offer great agricultural and power possibilities if modern methods of water use and conservation were applied. The Niger River, until about 40 years ago, was a river of mystery.

No one knew that the river which rises near the west coast of Africa at Sierra Leone and flows northeast far into the interior past Timbuktu is the same river which flows southeast through Nigeria and empties into the Atlantic.

With modern agricultural methods rice could be grown in abundance. Especially in Sierra Leone, Dr. Lowdermilk believes, enough rice could be grown to fill local needs and to supply England with all she could possibly consume.

In and near Kano in northern Nigeria, peanuts are grown in greater quantities than present facilities make it possible to ship out by a narrow gage railroad. The people had to build some 200 great pyra-

mids of peanuts 20 to 30 feet high and containing as much as 250,000 tons.

Another exceptional locality from the point of view of climate is the Jos plateau in east central Nigeria. On this flat tableland, 5,000 feet high and rich in tin, Dr. Lowdermilk found an ideal summer resort climate. There, too, he discovered that a prehistoric people—about whom there remains not even a legend—had built an elaborate system of terraces for farming on slopes.

These terraces were laid out so well that Dr. Lowdermilk thinks that the builders must have had accurate instruments. They built stone drainage channels and there is even evidence that they had provided for irrigation.

Damage from Erosion

Other parts of Nigeria have been terribly damaged by erosion. In some places, great gullies have been torn in the earth's surface 200 to 250 feet deep. Although tremendous sums have been spent in an attempt to stop the deepening of these gullies, the effort has been unsuccessful.

Dr. Lowdermilk observed hopeful possibilities for tree farming in South Africa. In one area in Swaziland in the southern tip of Africa, trees grow with phenomenal rapidity. This is in a misty zone with heavy rains, and trees grow as much as ten feet a year. The wood production is about five times as fast as that grown in the



"GROUND NUT" SCHEME—Dr. T. P. Phillips inspects his crop of peanuts which is part of the much publicized plan to grow peanuts for oil for England. Director of agriculture of the "ground nut" scheme, Dr. Phillips is a noted South African agriculturist.



CROP FOR CASH—In one misty rain-forest area, the trees grow so very rapidly that they form a profitable crop for tree farmers who grow them to cut and sell.

United States. Many people there are engaged in tree farming because the return is so fast that it makes it very profitable.

In another misty belt in Southern Rhodesia, Dr. Lowdermilk saw in a remnant grove of about 200 acres, at Mt. Salinda, a giant mahogany tree nine feet in diameter and 170 feet tall. But these forests are constantly endangered by the practice of burning over the land. On fire-swept savanna, he saw what he calls "cripple trees," damaged and deformed by burning so that the wood is worth nothing except for fuel.

Pilot Projects as Models

To solve Africa's tremendous twin problems of over-population and agricultural underproduction, Dr. Lowdermilk urges the establishment of pilot projects designed to show African natives in a concrete, visible way what can be done to turn their land to greater production.

Such projects offer a pattern for point four assistance; they could serve to demonstrate measures of rural reconstruction, Dr. Lowdermilk points out.

These pilot projects of rural reconstruction should have three legs to stand on. The first leg, agriculture, would demonstrate improved production per acre, but more important, increased production per man, which will give farmers greater purchasing power.

They will show the people what a modern farm is like. They can go home, imitate, and turn their stone-age farms into modern food producers.

But more efficient agriculture would release man power. If there are not jobs to take up the manpower, the agricultural program would bog down. So the second leg would be decentralized rural industries to make articles that would improve

living for the people—tools, vehicles, home furnishings.

The third leg would be village improvement: roads, transportation, sanitation, communication, water supply, clinics, schools.

These three aspects of the pilot project should move along together. They would also serve as training grounds for the people and for teachers of the people. The education in model schools should then be tied in to the community life, to the land and to reconstruction. The church should also be located there, forming a part of

the activity for the betterment of living conditions.

On his way home, Dr. Lowdermilk visited the "ground nut scheme" of Tanganyika. Dr. T. P. Phillips, well known agriculturist of South Africa, recently accepted directorship of the agricultural activities of the project. Under his leadership, this rash undertaking has a much better chance of growing peanuts for vegetable oils for England. In drier areas, Dr. Phillips is growing sunflowers for oil seed and in suitable soils, peanuts.

Science News Letter, September 9, 1950

GEOLOGY

Wegener Theory Disputed

► EUROPE and America never lay cheek by cheek in a past geological era only to drift apart and form what is now the Atlantic Ocean.

The famous Wegener theory of continental drift advanced over two decades ago was disputed in Birmingham before the British Association for the Advancement of Science by a Dutch geologist, Prof. J. H. F. Umbgrove of Delft.

Even if there was a mysterious mechanism that allowed continents to drift over the face of the earth, data presented by Prof. Umbgrove contradict the supposed consequences of the drift.

Prof. R. D'O. Good, botanist of University College in Hull, agreed that the idea of vast continental movements does not fit the facts. The distribution of flowering plants in the world is usually explained by assuming that the isolation of the chief land masses was once less than it is today, but Prof. Good finds that this is not necessarily so.

The discontinuous distribution of animals in the world favors the Wegener

theory, however, Dr. H. E. Hinton, zoologist of Bristol University, said.

Science News Letter, September 9, 1950

WILDLIFE

African Rats Reach National Zoo

► LOOKING somewhat like undernourished porcupines, two strange, shy African rats have come to the National Zoological Park in Washington. Their technical name is *Lophiomys*—meaning giant crested spiny-haired rat; their home, the British protectorate of Uganda in East Africa. Strictly vegetarians, and believed by Dr. William Mann, director of the national zoo, to be in a rodent family all to themselves, the animal newcomers may be the first of their breed ever to have reached the United States.

Science News Letter, September 9, 1950

**NEW Model SL
MINERALIGHT**

Genuine Ultra Violet Black Light Lamp

**For Schools... Hobbyists
... Laboratories**

This new, light-weight MINERALIGHT has adequate intensity for general use. It is particularly valuable for laboratory work. Schools have found it furnishes new interest in science teaching, geology, physics and chemistry. Hobbyists find new beauties in nature and enjoy collecting fluorescent minerals. MINERALIGHT Model SL is available in either long or short wave. Field units including batteries, carrying case with daylight viewing aperture available... Write for complete information.

ULTRA-VIOLET PRODUCTS, INC.

Dept. SN — South Pasadena, California



**Cargille
MICRO BEAKERS**

For direct weighing of small quantities (capacity 1 ml) of oils and fats for Iodine Number Determinations (drop the glass beaker and sample into the solution).

For semi-micro procedures
15 for \$1.00 **DEPT. 5** Gross \$7.50

**KEEP YOUR "KEY" SAMPLES
FOR QUICK REFERENCE**



R.P.C. Sample Storage
Set stores 100 samples in 3 1/4" shelf space; glass vials, 4 1/2" x 1/2". Set complete with cork closure \$3.25; Screw cap \$5.00.

Thousands In Use!
Write for leaflet SNL-SS listing other sizes.

R. P. CARGILLE

118 Liberty St. New York 6, N. Y.

GENERAL SCIENCE

Science Draft Defeated

► THE Defense Department has just been defeated in an attempt to grab off control of all highly skilled personnel in the country—scientific and otherwise—and has withdrawn to previously prepared positions. Here is what happened:

Members of a Senate armed forces subcommittee, considering the Gurney bill to draft doctors and dentists, slipped into

the bill provisions for registering and drafting personnel in scientific, professional, technical and other occupational categories. It is believed this was done with the knowledge of the Defense Department. If it had passed in this form, the Defense Department, through Selective Service, would have had top priority on the best brains and skills of the country, throwing the leavings to vital private industry and university laboratories.

At this point the National Security Resources Board stepped in with an amendment which would have taken control away from Selective Service and put it in the hands of President Truman. Under the plan he was expected to set up a civilian board of experts to allocate this precious talent where it could best be used, whether in or out of uniform. This would have been done through a provision for deferment "in the national interest."

N.S.R.B. was not yet ready to take this step, but the move forced the top civilian planning board to show its hand with some of its manpower plans.

When the Defense Department saw that N.S.R.B. would probably win out in placing control of scientists and other highly skilled citizens in the President's hands, it suddenly showed no more interest in anybody but doctors and dentists. Thus the bill, when it is signed by the President, will provide for the drafting of members of the healing arts professions and those in allied categories only.

Now the scientists are beginning to organize. They will present plans to President Truman and to the N.S.R.B. which envisage the efficient usage of this highly valuable manpower.

Science News Letter, September 9, 1950

A VIVID, REALISTIC STORY

The experiences that make Nursing a perennially interesting profession!

A Lamp is Heavy



by
SHEILA MacKAY RUSSELL

• No one but a nurse could have written this book!

Every line rings true. The student nurse will find her own joys and sorrows, triumphs and tribulations on every page. To the graduate, A LAMP IS HEAVY will bring a flood of happy memories.

• Here is the real story of human relationships in Nursing. The best interpretation of the life of a student nurse we have yet seen.

Illustrations by
Jean McConnell

At all bookstores or

MAIL THIS COUPON FOR

FREE EXAMINATION.

J. B. LIPPINCOTT COMPANY
East Washington Square, Philadelphia 5, Pa.
Please send me Sheila MacKay Russell's A LAMP IS HEAVY for examination and approval. Within 10 days I will send you \$3.00 plus postage or will return the book postpaid.

Name _____

Address _____

City and State _____

SAVE! If you enclose payment, publishers will pay mailing charge. Return guarantee applies, of course.

SNL

To the Person who is

DEAF

and is Tired of Straining to

HEAR

• Do you miss the precious things you should hear—music, the voices of loved ones, all the sounds that make up life?

Sounds which have been long lost—even low-voiced conversation, church sermons and business conferences, with many voices taking part, are brought back with startling clarity by the new better-than-ever Beltone.

NO BUTTON SHOWS IN EAR!

This tiny, one-unit device, which weighs only a few ounces, is all you wear. Gone, forever, are the inconveniences of old-fashioned hearing aids. No more heavy, clumsy separate battery packs. Hide your deafness with the amazing new Phantomold. Discover what the new better-than-ever Beltone can do for YOU!



FREE! Learn how much better and more clearly Beltone uncovers precious sounds you, perhaps, thought lost forever. Just mail coupon for valuable free booklet. No obligation.



MAIL COUPON FOR FREE BOOKLET

Beltone Hearing Aid Co., Dept. 356C
1450 W. 19th St., Chicago 8, Illinois

Please send me, without cost or obligation, the new FREE book of interesting facts about DEAFNESS and HOW to OVERCOME IT.

Name _____

Address _____

Town _____ State _____

NUTRITION

Egg Has Best Amino Acid Distribution

► A WHOLE egg rates at the top of the protein nourishment scale in having the best distribution of 17 amino acids, or protein building blocks.

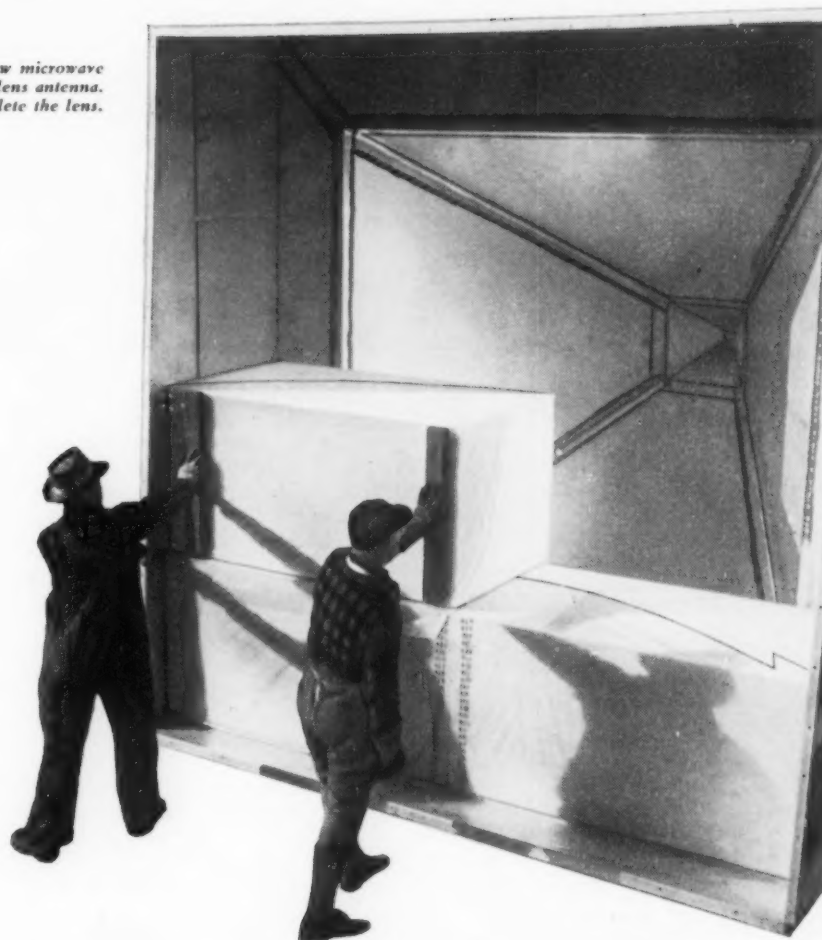
This finding, made with a new "measuring stick" for determining the nourishing values of protein, was announced by the Rutgers University Bureau of Biological Research in New Brunswick.

In descending order of value, the other protein sources studied were: egg white (albumen), beef or milk, peanut flour and wheat gluten.

Ten colleges and universities and 13 industrial laboratories made this study.

Science News Letter, September 9, 1950

Mounting Bell's new microwave lens in a horn-lens antenna. Other blocks will complete the lens.



A focus on better, low-cost telephone service

In the new microwave radio relay system between New York and Chicago, giant lenses shape and aim the wave energy as a searchlight aims a light beam.

Reasoning from the action of molecules in a glass lens which focuses light waves, Bell Laboratories scientists focus a broad band of microwaves by means of an array of metal strips. To support the strips these scientists embedded them in foam plastic which is rigid, light in weight, and virtually transparent to microwaves.

This unique lens receives waves from a wave guide at the back of the horn. As they pass across the strips, the waves are bent inward, or focused, to form a beam like a spotlight. A similar antenna

at the next relay station receives the waves and directs them into a wave guide for transmission to amplifiers.

This new lens will help to carry still more television and telephone service over longer distances by microwaves. It's another example of the Bell Telephone Laboratories research which makes your telephone service grow bigger in value while the cost stays low.

Laboratory model of the new lens. A similar arrangement of metal strips is concealed in the foam plastic blocks in the large picture.

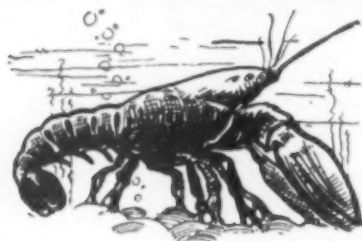


BELL TELEPHONE LABORATORIES

Working continually to keep your telephone service big in value and low in cost.

ZOOLOGY

NATURE RAMBLINGS



Lobster

► AN earlier generation once took great delight in a story about a Midwestern farmer who refused a lobster on the grounds that he "didn't eat bugs." Modern refrigerated railroad cars and anywhere-any time air cargo service has made it possible for the innermost of inlanders to have lobster regularly now. Most of us "eat bugs"

ANOTHER LANGUAGE

Is a MUST For Modern Scientists

You Can Learn
Easily, Quickly,
Accurately
With



The World's-Standard

LINGUAPHONE

CONVERSATIONAL METHOD

You learn through natural everyday, conversation . . . with effortless ease and real pleasure. First you LISTEN and in an amazingly short time you SPEAK, with correct accent and the right swing.

In your own home you can study alone in privacy or have wife and children or friends join you in a delightful pastime and cultural necessity that is an essential asset whether science is your career or your hobby.

It will take you only 20 minutes a day to master:

SPANISH ITALIAN GERMAN
PORTUGUESE FRENCH RUSSIAN

or any of 29 languages

the Linguaphone Conversational way.

Linguaphone courses were made astonishingly simple, easy and practical by more than 150 expert linguists of international fame. Endorsed by educators, used by colleges, schools, armed services, and the choice of more than one million home-study students.

SEND FOR FREE BOOKLET

LINGUAPHONE INSTITUTE
31-P Radio City, New York 20, N. Y.
Send me the FREE Linguaphone Book

I want to learn _____ language

Name _____

Address _____

City _____ Zone & State _____

even if our grandparents could or would not have them in the house.

The farmer of the anecdote was not so far wrong at that. The lobster and his relatives the crab, shrimp and inland "crawdads" really are cousins of the insects. They form the marine division of the great order of Arthropoda, which means "jointed-leg animals," just as the insects form the infantry and airborne divisions. The lobster and his relatives are known collectively as the Crustacea because of the hard shell, or crust, in which they are encased.

Lobsters and insects are alike in having jointed bodies and legs, in having their skeleton on the outside rather than the inside of their bodies, in having compound eyes made up of a mosaic of little eyes, and in many other respects.

The lobster differs from the insect in the obvious matter of having no wings; he would have little use for them in the watery depths he inhabits. Neither does the lobster have a division between head and chest, such as an insect has; his chest begins right under his chin, without formality of a neck.

As if to make up for his lack of wings, the lobster has two pairs of antennae or feelers. The insect has but one pair. And finally, while the insect has only six legs, the lobster glories in ten. He has two of the most powerful sharp-ridged claws in the marine kingdom and no hesitancy in using them if a careless fisherman picks him up by the wrong handle. By reason of his legs and claws, the lobster and his nearer relatives are known to zoologists as "decapod crustaceans."

Only very recently has science begun to suspect that the lobster has a hidden talent which puts him in the company of such skilled navigators as the homing pigeon and the honey bee.

Experiments with lobsters off Bermuda showed they can return unerringly to their favorite feeding grounds even when taken far out into deep water or to the other side of large land masses. Drs. Edwin P. Creaser and Dorothy Travis of the Bermuda Biological Station believe lobsters are fully "aware" of where they are and have a remarkable homing instinct. The how and why of the trait remains an unanswered and puzzling biological mystery.

Science News Letter, September 9, 1950



NEW THEORIES

LIFE ON MARS, illus. 50 pp. . . . \$1.00
Identical to lunar craters, vegetation basins are shown to exist on Mars as canal terminals.

SATURN HAS RINGS, illus. 50 pp. . . . \$1.00
Saturn's rings provide convincing evidence supporting a new theory of planetary evolution.

LAST ICE AGE, illus. 56 pp. . . . \$1.00
The perplexing riddle of glacial epochs is given an intriguing astronomical solution.

Send postcard for illustrated circular N-1

DONALD LEE CYR

1412 Palm Terrace, Pasadena 6, California

MINING

Roof Bolting Prevents Roof Falls in Mines

► THE use of roof bolts to prevent roof falls in mines, the cause of many fatalities, was called in Salt Lake City one of the most progressive steps ever taken in promoting underground safety.

The statement was made by M. C. McCall of the U.S. Bureau of Mines at the meeting of the American Mining Congress. Roof bolting is sponsored by the Bureau, he said, because safety and maximum efficiency go hand in hand. The use of roof bolts is approved by miners and management alike.

Roof bolts, which replace in part the pillars of earth or timbers to support the roof after ore is removed, are steel rods driven into the roof either vertically or at an angle to hold the layers together. Rods of wood, in drilled holes, have been successfully used where corrosive water gives short life to steel pins.

Roof bolting is not a new idea but its use has greatly increased recently. Labor requirements are much reduced by this system of ground support, Mr. McCall stated. Tonnages of ore have increased steadily, and production crews need not wait for timber crews to stand timber.

He reported the results of roof bolting in both lead and iron mines. All iron ore mines in Alabama in which roof bolts have been installed attained the best injury records in their history in 1949, he stated.

Roof bolting is coming into rapid use in coal mines, another meeting of the American Mining Congress was told earlier this year by Edward Thomas, also of the Bureau of Mines. In 1949, he said, approximately 200 coal mining companies were using bolts to support 14,000,000 square feet of roof surfaces.

Science News Letter, September 9, 1950

GENERAL SCIENCE

Triple Science Manpower Needed for Survival

► TRIPLE America's present scientific manpower is needed for national survival. Prof. John S. Nicholas of Yale warns that we are in competition with keen scientific minds in Russia that "already have access to much of the same knowledge stockpile that we have." He wants a national program, like the GI college program, that will select early the outstanding minds with scientific aptitudes, give them a rapid and rounded education and subsidize those who prove to be creative scientists. These scientists would produce the information that can be engineered into technical progress needed for a long and continuous struggle with communism.

Science News Letter, September 9, 1950

Books of the Week

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C. Ask for free publication direct from issuing organizations.

ANNUAL REPORT OF THE BOARD OF REGENTS OF THE SMITHSONIAN INSTITUTION 1949—Smithsonian Institution—Gov't. Printing Office, 422 p., illus., \$2.75. The appendix contains the usual summary articles for which this report has long been famous. Such articles as "Th Elementary Particles of Physics" by Carl D. Anderson, "Modern Soil Science" by Charles E. Kellogg and "The State of Science" by Karl T. Compton are included.

ANNUAL REPORT OF THE FEDERAL SECURITY AGENCY 1949—Gov't. Printing Office, 214 p., illus., paper, 45 cents. Contains the Administrator's report and the reports of all the Agency's constituent organizations.

THE CONDENSED CHEMICAL DICTIONARY—Francis M. Turner, Editorial Director—Reinhold, 4th ed., 726 p., \$10.00. A standard dictionary revised and enlarged by Prof. and Mrs. Arthur Rose.

CONFERENCE ON REVISION OF UNITED STATES MINING LAWS—Gov't. Printing Office, 295 p., illus., paper, \$2.00. Hearings before a Special Subcommittee on Public Lands, House of Representatives, eighty-first congress first session.

CORALS OF THE DEVONIAN TRAVERSE GROUP OF MICHIGAN, PART III, ANTHOLITES, PLEU-RODICTYUM, and PROCTERIA—Erwin C. Stumm—University of Michigan Press, approx., 16 p., illus., paper, 75 cents.

THE EVOLUTION OF SCIENTIFIC THOUGHT: From Newton to Einstein—A. d'Abro—Dover, 2nd ed., illus., \$3.95. A non-technical account of classical and modern physics.

THE FRENCH POLAR RESEARCH EXPEDITIONS 1948-1951—Paul E. Victor, Director—The French Embassy Press and Information Division, 22 p., illus., paper, free upon request to publisher, 610 Fifth Ave., New York 20, N. Y. A general report.

GEOLOGY OF BRAZOS COUNTY, TEXAS—A. A. L. Mathews—Texas Engineering Experiment Station, 14 p., illus., paper, free upon request to publisher, College Station, Texas. The author's interpretations. A map is also included.

HIGHWAY LOADS AND THEIR EFFECTS ON HIGHWAY STRUCTURES BASED ON TRAFFIC DATA OF 1942—Henson K. Stephenson and A. A. Jakkula—Texas Engineering Experiment Station, Bull. No. 16, 134 p., illus., paper, free upon request to publisher, College Station, Texas.

INDUSTRIAL CHEMICALS—W. L. Faith, Donald B. Keyes and Ronald L. Clark—Wiley, 652 p., illus., \$8.00. Technical and economic data concerning the major industrial chemicals.

MAMMALS OF THE REKROAD FORMATION FROM FOX CANYON, MEADE COUNTY, KANSAS—Claude W. Hibbard—University of Michigan Press, approx. 79 p., illus., paper, \$1.50.

MECHANICS AND PROPERTIES OF MATTER—R. C. Brown—Longmans, Green, 276 p., illus., \$2.25. An introductory college physics text.

MONSTERS OF OLD LOS ANGELES: The Prehistoric Animals of the La Brea Tar Pits—Charles M. Martin—Viking, 127 p., illus., \$2.50. A report on the fossil remains of prehistoric animals taken from the tar pits in modern Los Angeles. It is written primarily for the layman and illustrated by Herb Rayburn.

NEW EVIDENCE OF THE LOWER MIOCENE AGE OF THE BLACKTAIL DEER CREEK FORMATION IN MONTANA—Claude W. Hibbard and Kendall A. Keenmon—University of Michigan Press, approx. 12 p., illus., paper, 50 cents.

RUBY THROAT: The Story of a Humming Bird—Robert M. McClung—Morrow, approx. 50 p., illus., \$2.00. A picture-story of one year in a humming bird's life. Well illustrated.

SCIENCE LABORATORIES IN NEED—Robert Legris—Unesco (U. S. Distributor: Columbia University Press), 23 p., illus., paper, 15 cents. A report on the conditions in the college laboratories of Europe and Asia.

SEPTIC TANK STUDIES: Individual Sewage Disposal Systems—Housing and Home Finance Agency, Tech. Paper No. 14, 84 p., illus., paper, free upon request to publisher, Washington 25, D. C.

SEXUAL BEHAVIOR IN SOCIETY—Alex Comfort—Viking, 157 p., \$2.75. Among the topics discussed are monogamy and sexual conduct, social and biological backgrounds of sexual behavior and sexual sociology. Primarily a handbook for social workers.

SOME CULTURAL EXPERIMENTS WITH KENAF IN CUBA—Joe E. Walker and Manuel Sierra—Gov't. Printing Office, U. S. Dept. of Ag. Circ. No. 854, 24 p., illus., paper, 10 cents. A report of experiments on this plant.

TREE CROPS: A Permanent Agriculture—J. Russell Smith—Devin-Adair, 408 p., illus., \$6.00. A discussion of nut, persimmon and cork trees in relation to finding the right one for your soil and your climate.

TV INSTALLATION TECHNIQUES—Samuel L. Marshall—Rider, 330 p., illus., \$3.60. Discusses the many problems in installing a television set. For the TV installation technician.

YOUR BICYCLE—Steve Kraynick—Bennett, 126 p., illus., paper, \$1.35. A practical guide on how to repair and care for a bicycle.

YOUR CHILD AND OTHER PEOPLE: At Home, At School, At Play—Rhoda W. Bacmeister—Little, Brown, 299 p., illus., \$3.00. Presents suggestions on how to aid your child in his social life. Written to aid children through the age of eight.

YOUR HAIR: Its Health, Beauty and Growth—Herman Goodman—Emerson, 287 p., illus., \$2.95. Discusses the many problems of hair retention, regrowth and removal.

YOUR SCHOOLS: An Approach to Long-Range Planning of School Buildings—William W. Caudill—Texas Engineering Experiment Station, 43 p., illus., paper, \$1.00 outside of Texas.

Science News Letter, September 9, 1950

WAR SURPLUS BARGAINS

Government's 7 X 50 Binoculars

Assemble Them Yourself! Complete Optics! Complete Metal Parts! Save More Than 1/2 Regular Cost!



METAL PARTS—Set includes all metal parts—completely finished—for assembly of 7 X 50 Binoculars. No machining required. Sturdy Binocular Carrying Case is optional with each set of Metal Parts.

Stock #842-Q. \$39.40

Postpaid, plus \$4.80

for Case. Total \$44.20

OPTICS—Set includes all Lenses and Prisms needed for assembling 7 X 50 Binoculars. These are in excellent condition—perfect or near-perfect—and have new low reflection coating.

Stock #5182-Q. \$25.00 Postpaid

Note: These are fine quality standard American-made parts, not Japanese.

NOTICE! If you buy both Binocular Optics and Binocular Metal Parts, add 20% Federal Tax.

MAKE A MICROSCOPE—Get wonderful results. Own an instrument worth many times the cost to you. Simply convert a U. S. Govt. Rifle Scope (Govt. cost over \$65.00). It's easy! We show you how. No machining required. Get up to 40 Power. Scope we furnish is used but good condition. . . sent complete with extra lenses and direction sheet.

Stock #2959-Q. \$7.50 Postpaid

WRENCHES—for above project, to simplify and speed up work.

Stock #289-Q. \$1.00 Postpaid

NON-ABSORBING BEAM-SPLITTING MIRROR—Latest development! Optically flat to 1/4 wave length. Size: 1-15/16" x 2-15/16"—3/16" thick. Reflects approximately 50% and transmits approximately 50%. No light is absorbed. Has a three-layered film which accomplishes non-absorption.

Stock #567-Q. \$5.00 Postpaid

AMAZING POCKET-SIZE 10-POWER SPOTTING SCOPE—Complete With Tripod and Swivel Head. Only 5 1/2" long—8 1/4" high on tripod. Adapted from Army telescope and worth many times our price. Excellent for clarity and sharpness. Has prism erecting system, achromatic objective, Ramsden Eyepiece. Lenses low reflection coated. Ideal Scope for sportsmen and hunters.

Stock #2955-Q. \$14.95 Postpaid

POLAROID VARIABLE DENSITY ATTACHMENT—Consists of two mounted Polaroid filters. Control knob rotates one about the other, giving variable density. Used in photography, experiments in polarized light, controlling light transmission, etc.

Stock #693-Q. \$3.00 Postpaid

SPECIAL! SPECIAL! RONCHI RULINGS

Black Line Grating

Plate glass with etched parallel black lines—space between each line is same as thickness of the ruled line itself. Made by photographic process. Number of lines per inch ranges from 65 to 133 as shown below. Normally cost \$4.00 to \$5.00 per sq. inch. Used for testing astronomical mirrors, magnifiers. Used in pairs to see diffraction pattern. (Some seconds, with slight scratches).

1 in. x 1 in.			2 in. x 2 in.		
Stock No.	Lines Per In.	Price	Stock No.	Lines Per In.	Price
2122-Q	65	\$.75	2133-Q	65	\$1.50
2126-Q	85	.75	2134-Q	85	1.50
2127-Q	110	1.00	2136-Q	110	2.00
2128-Q	120	1.00	2137-Q	120	2.00
2129-Q	133	1.00	2138-Q	133	2.00

All above sent Postpaid.

TELESCOPE EYEPIECE—Consists of 2 Achromatic Lenses, F. L. 28 mm. in a metal mount.

Stock #5140-Q. \$4.50 Postpaid

SIMPLE LENS KITS! THE LENS CRAFTERS DELIGHT! Kits include plainly written, illustrated booklet showing how you can build lots of optical items. Use these lenses in photography for copying, ULTRA CLOSE-UP SHOTS, Microphotography, for "Dummy Camera", Kodachrome Viewer, Detachable Reflex View Finder for 35 mm. cameras. Stereoscopic Viewer, ground glass and enlarging focusing aids. And for dozens of other uses in experimental optics, building TELESCOPES, low power Microscopes, etc.

Stock #2-Q—10 lenses ----- \$ 1.00 Postpaid

Stock #5-Q—45 lenses ----- \$ 5.00 Postpaid

Stock #10-Q—80 lenses ----- \$10.00 Postpaid

SLIDE PROJECTOR SETS—Consist of all unmounted lenses you need to make the following size projectors:

Stock #4038-Q—2 1/4" x 2 1/4" ----- \$3.35 Postpaid

Stock #4039-Q—2 1/2" x 3 1/2" ----- \$3.35 Postpaid

We Have Literally Millions of WAR SURPLUS LENSES AND PRISMS FOR SALE AT BARGAIN PRICES. Write for Catalog "Q"—FREE! Order by Stock No. Satisfaction Guaranteed

EDMUND SALVAGE CO.
BARRINGTON, NEW JERSEY

• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., Washington 6, D. C. and ask for Gadget Bulletin 535. To receive this Gadget Bulletin without special request each week, remit \$1.50 for one year's subscription. (Gadget Bulletins 533-534 are not appearing due to error in numbering.)

❁ **WATER SYSTEM** for the home will pump 250 gallons per hour from a 22-foot depth but is small enough to put under a kitchen sink. Within the unit is a 10-gallon pressure tank, a jet pump and a motor unit, all housed in a casing 27 inches high and 16 inches in diameter.

Science News Letter, September 9, 1950

❁ **FOUNTAIN TOOTHBRUSH**, a recently patented gadget, has rubber hose connection from a faucet to the end of its tubular handle through which water is delivered to the bristles. Its feature is an attachment device at the end of the handle, so that different brushes may be used.

Science News Letter, September 9, 1950

❁ **FILM VIEWER** for transparent slides in two-by-two-inch cardboard mounts holds 20 slides and permits them to be viewed rapidly one after another by a finger movement. After viewing, slides are returned to their original position in their original sequence and can be re-viewed.

Science News Letter, September 9, 1950

❁ **MORTAR GUN**, shown in the picture, is for use in applying mortar on bricks or



blocks without the skill required in trowel application and with less waste. It is an electrically-operated device with an end-

less screw inside of the type used in familiar meat grinders.

Science News Letter, September 9, 1950

❁ **SEAMLESS ALUMINUM** sheathing for telephone and electric power cables, already in experimental use, is thinner, stronger and lighter in weight than the usual lead tubing. The new sheathing, produced by a cold reduction process, is softer and more flexible than earlier aluminum sheathing.

Science News Letter, September 9, 1950

❁ **ZIP-SLEEVE RAINCOAT**, designed in the U. S. Department of Agriculture, has cape-like sleeves which can be worn open on the front or closed by means of a zipper. It can be made of either water-resistant cotton fabric or water-proof plastic film.

Science News Letter, September 9, 1950

❁ **PLASTIC HAND**, which can be stuck on a wall in the home by means of a suction cup, is a handy holder of neckties, hosiery, towels and lingerie when any of these articles are tucked on its outstretched fingers. When not in use, it folds up and back against the wall.

Science News Letter, September 9, 1950

Do You Know?

The secret of restful sleep is the ability to relax.

❁ India has about 170,000,000 cattle, or one-third of the world's cattle production.

Brain workers require more sleep than persons whose work consists of physical labor.

Jaws of small animals, with the teeth left in, were used to comb the hair of early women, it is said.

Ragweed pollen is believed to be responsible for 70% of the hay fever cases in the eastern United States.

Cows with good bedding in the dairy stable spend more time lying down than they would otherwise; this saves energy and increases milk production.

Rubber fenders, extending half way around each wheel, are being tested on streetcars; they keep mud and dirt from electrical parts, do not corrode, and never rattle.

An extra fillip for every week . . .

SCIENCE NEWS LETTER for BIRTHDAYS ANNIVERSARIES

THE RIGHT PRESENT FOR PEOPLE WITH INTELLECTUAL CURIOSITY

When you need the right present for the right person, give SCIENCE NEWS LETTER. Put the name of that special person on the coupon below and mail it to us today. We shall send a gift announcement card signed with your name as imprinted at the right.

SEND GIFT SUBSCRIPTION TO:

Name _____

Address _____

City _____ Zone _____

State _____

- ☐ I enclose \$5.50
☐ Please bill me later

Mail to Science News Letter, 1719 N Street, N. W., Washington 6, D. C.

GIFT ORDER

in the name of _____

SCIENCE SERVICE
1719 N Street N. W. • Washington 6, D. C.

Clip and enclose this address imprint whenever you write us to renew your SCIENCE NEWS LETTER subscription, change address, order other materials, etc. It identifies you as one of the SKL family. Lower line date is expiration. Allow three weeks for address change.

DETROIT PUBLIC LIBR
TECHNOLOGY DEPT
96 PUTNAM AVE
DETROIT 2 MICH
1950-1951 4